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KNX / DALI Gateway N 141/02	5WG1 141-1AB02

Product and functional description

The KNX / DALI gateway N 141/02 is a 4 MU wide, DIN-rail mounted KNX device with one DALI interface to which up to 64 DALI actuators (e.g. DALI ballasts) can be connected to. It is not allowed to connect DALI sensors to the DALI interface of the N 141/02.

DALI (Digital Addressable Lighting Interface) is a bidirectional communications interface in accordance with IEC 60929, whose specification has been defined by manufacturers of electronic ballasts. It not only enables the receipt of e.g. switching and dimming commands but also the sending of status information such as the failure of a lamp or the report of a detected error in the electronic ballast. According to IEC 60929 up to 64 DALI devices can be connected to a DALI line and can each be assigned an individual device address.

The KNX / DALI Gateway N 141/02 enables communicating with up to 64 DALI devices including detection and transmission of DALI status and failure information via KNX. DALI actuators can be switched and dimmed either individually or in groups. If a DALI actuator is assigned to one of the 16 groups it cannot be controlled individually anymore. An individual name, a group, pa-rameters and scenes (refer to the application program description) are assigned to the individual DALI electronic ballasts during commissioning with the ETS (Engineering Tool Software).

The power supply unit integrated in the N 141/02 supplies the gateway electronics and generates the DALI voltage. Additionally, it enables the operation of the gateway and a direct switching of all lamps controlled over its DALI interface even if the N 141/02 has not yet been commissioned with the ETS or if the communication via the KNX bus has been interrupted. For this purpose, the N 141/02 has a pushbutton located bottom left on its front plate for switching-on the "Direct mode" as well as for switching back to the "Bus mode". When this pushbutton has been pressed for the first time the yellow light emitting diode (LED) lights up permanently to indicate direct mode. Then all lamps controlled via DALI can be switched On or Off all together via the relevant two pushbuttons on the front plate of the gateway: pressing briefly the upper pushbutton switches the channel On while pressing briefly the lower push button switches the channel Off. A red LED integrated in the upper push button is used to indicate the On state of the lamps by a continuous light and to indicate a DALI cable error by flashing.

If the direct mode button is pressed for a second time, the yellow LED to indicate direct mode is extinguished and the N 141/02 is switched to "Bus mode".

The KNX / DALI Gateway N 141/02 can be used to control DALI actuators in emergency luminaires. Self-contained emergency luminaires containing two DALI devices (ballast and an inverter, each with a DALI interface) only up to 32 self-contained emergency luminaires may be connected to an N 141/02. The gateway automatically detects if a self-contained emergency lu-minaire contains two or only one DALI actuators. Self-contained emergency luminaires with two DALI interfaces and "normal" luminaires with only one DALI interface may be connected to the N 141/02, but the total number of 64 DALI devices may not be exceeded.

Self-test of the inverters of self-contained emergency luminaires can be started and the test result reported via the bus. The type of test (function test, short duration test or long duration test) that has to be started or has started can be commanded or queried. A test result will be reported automatically at the end of a test or can be queried.

All luminaires controlled by a N 141/02 can be dimmed to the set "Dimming value on emergency" even when they are not effected by any mains or DALI power failure. By this all luminaires may be dimmed to the same brightness level as all self-contained emergency luminaires.

During "Emergency Operation" all luminaires will not respond to any on/off or dim commands and cannot be commissioned.

Application program

07 B0 KNX / DALI Gateway 981C09

Siemens AG
Industry Sector, Building Technologies
Low Voltage Distribution
P.O. Box 10 09 53, D-93009 Regensburg
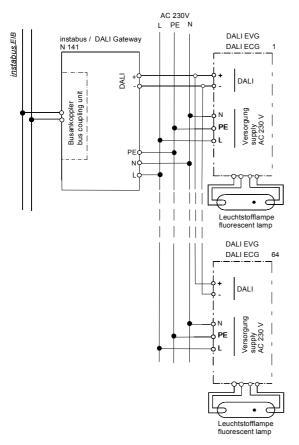
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Connection example

Installation notes
- The device can be used for permanent installation in dry, interior rooms and for insertion in distribution boards or miniature housings.

⚠ **WARNING**

- The device must be mounted and commissioned by an authorised electrician.
- Unoccupied sections of DIN rail with data rail inserted must be protected with the cover 5WG1 192-8AA01.
- When connecting the device, it should be ensured that the device can be isolated.
- The device may not be opened.
- When planning and installing electrical installations, the relevant guidelines, regulations and specifications of the respective country must be observed.

Technical data
Power supply
- KNX Bus voltage: carried out via the bus line
- KNX bus current: 5 mA (only half a standard bus load !)
- Electronics and DALI output:
  - integrated power supply for AC/DC 110-240 V, 50-400 Hz
  - power consumption: max. 7 W

Inputs/outputs
- Mains connection: 3-pole (PE, N, L)
- DALI output (according to IEC 60929):
  - max. 64 DALI devices with ≥ 8 kOhm input impedance
  - DALI bus voltage: approx. DC 19 V, floating, short-circuit-proof

Operating elements
- 1 learning push button:
  for toggling between normal mode / addressing mode
- 1 push button:
  for toggling between bus mode / direct mode
- 2 push buttons:
  for switching all electronic ballasts ON / OFF

Display elements
- 1 red LED:
  for checking the bus voltage and for displaying normal mode / addressing mode
- 1 green LED:
  for displaying the 230 V operating voltage
- 1 yellow LED:
  for displaying direct mode / bus mode
- 1 red LED per push button:
  for ON / OFF status indication (only in direct mode) and failure indication by blinking with 1 Hz (communication or illuminant fairlure)

Connections
- Plug-in terminals for mains voltage and DALI output, insulation strip length 10 ... 11 mm
- The following conductor cross-sections are permitted:
  - 0.5 ... 3.3 mm² (AWG 12) single-core
  - 0.5 ... 3.3 mm² (AWG 12) stranded multi-core
  - 0.5 ... 3.3 mm² (AWG 12) finely stranded, untreated
  - 0.5 ... 1.5 mm² finely stranded, with connector sleeve
- The supply cable to the N 141 must be fused with a circuit-breaker of characteristic B or C for a max. nominal current of 6 A!
- KNX Bus line: Pressure contacts on data rail and bus terminal

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Mechanical data
- Housing: plastic
- Dimensions: DIN rail mounted device in N-system dimensions, width: 4 module units (1 module unit = 18 mm)
- Weight: approx. 150 g
- Fire load: approx. 3400 kJ
- Installation: Snap-on mounting on DIN rail EN 60715-TH35-7.50

Electrical safety
- Degree of pollution (according to IEC 60664-1): 2
- Protection type (in accordance with EN 60529): IP 20
- Overvoltage category (according to IEC 60664-1): III
- Bus: safety extra-low voltage SELV DC 24 V
- Device complies with: EN 50090-2-2 and EN 60669-2-1

EMC requirements
- complies with EN 50090-2-2

Environmental conditions
- Climatic withstand capability: EN 50090-2-2
- Ambient operating temperature: - 5 ... + 45 °C
- Storage temperature: - 25 ... + 70 °C
- Relative humidity (not condensing): 5 % to 93 %

Reliability
Failure rate: 465 fit at 40°C

Markings
- KNX *EIB*

CE mark
- In accordance with the EMC guideline (residential and functional buildings), low voltage guideline

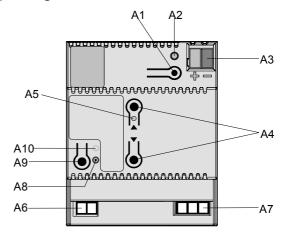## Location and function of the display and operating elements

Figure 1: Location of the display and operating elements

A1 Button for toggling between normal / addressing mode for transferring the physical address
A2 LED (red) for displaying normal mode (LED off) or addressing mode (LED on); it is automatically extinguished once the physical address has been transferred
A3 Plug for bus connecting terminal
A4 Pushbuttons for direct operation (all lamps On / Off)
A5 Red LED
  direct mode: status all lamps (On/Off)
  display DALI – failure
  flash N times – approx. 1s break – flash N times ...
  N = 1: -> 230V connect to DALI – Input!
  N = 2: -> shorted DALI – cable!
  N = 3: -> low DALI – voltage!
  N = 4: -> no DALI – device connected!
A6 Terminals for the DALI bus cable (D+, D-)
A7 Terminals for protective earth, neutral and phase conductor (PE, N, L)
A8 LED (yellow) for displaying when direct mode = On
A9 Button for toggling between bus / direct mode
A10 LED (green) for displaying the operating voltage

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Installation and wiring
General description
The DIN rail mounted device in N system dimensions (width 4 module units) can be inserted in N distribution boards, surface- or flush-mounted and wherever DIN rails EN 50022-35 x 7.5 are available. The connection with the bus line is either carried out via a bus terminal or via the contact system to the data rail.

Installing the DIN rail mounted device (Figure 2)
- Suspend the DIN rail mounted device (B1) on the DIN rail (B2) and
- Rotate the DIN rail mounted device backwards until the slide switch audibly clicks into position.

Dismantling the DIN rail mounted device (Diagram 2)
- Remove all the connected cables,
- press the slide switch (C3) downwards with a screwdriver and
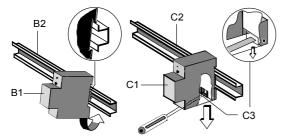- remove the DIN rail mounted device (C1) from the DIN rail (C2) with a swivel action.

Figure 2: _Installing / dismantling the DIN rail mounted device_

Removing the bus terminal (Figure 3)
- The bus terminal is located on the top of the device (D1)
- The bus terminal (D2) consists of two sections (D2.1, D2.2), each with four terminal contacts. Care should be taken not to damage the two test sockets (D2.3), either by accidentally connecting them to the bus conductor or with the screwdriver (when trying to remove the bus terminal).
- Carefully insert the screwdriver in the wire entry slot underneath the bus terminal (D2) and pull the bus terminal forwards out of the device (D1).

Note: Care should be taken as there is a risk of shorting the device!
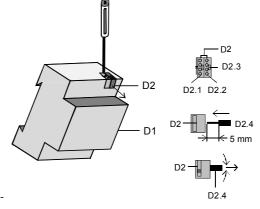
Connecting the bus terminal (Figure 3)
- Place the bus terminal in the guide slot and press the bus terminal (D2) backwards until it reaches the stop.

Connecting the bus cable (Figure 3)
- The bus terminal (D2) is suitable for single-core conductors with 0.6... 0.8 mm Ø.
- Strip approx. 5 mm of insulation from the conductor (D2.4) and plug in the terminal (D2) (red=+, black=-).

Disconnecting the bus cable (Figure 3)
- Remove the bus terminal (D2) and the conductor (D2.4) out of the bus cable by rotating it backwards and forwards.

-

Figure 3: _Connecting and disconnecting the cable_

Connecting mains voltage and DALI bus cables
- The connections are designed with plug-in technology.
- Strip approx. 10-11 mm of insulation from the conductors and slide in the respective terminal.

Cross-sections:
- The following conductor cross-sections are permitted:
  - 0.5 ... 3.3 mm2 (AWG 12) single-core
  - 0.5 ... 3.3 mm2 (AWG 12) stranded multi-core
  - 0.5 ... 3.3 mm² (AWG 12) finely stranded, untreated
  - 0.5 ... 1.5 mm2 finely stranded, with connector sleeve
- The mains connection must be fused with a circuit-breaker of characteristic B or C with a max. nominal current of 6 A!

Mounting the insulating cap
- If the device should be mounted on a DIN rail without a data rail, the contact system must be covered with the supplied insulating cap.

Removing the locating clamp (Figure 4)
- The locating clamp (E3) encloses the contact system (E2) on the rear of the DIN rail mounted device (E1).
- Insert the screwdriver between the DIN rail mounted device (E1) and the locating clamp (E3) and remove the clamp.

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Clipping on the insulating cap: (Figure 4)
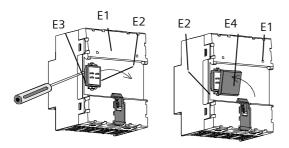- Place the insulating cap (E4) on the contact system and press so that it snaps in place.

E3 E1 E2   E2 E4 E1

Figure 4: Covering the contact system

Dimension drawing
Dimensions in mm
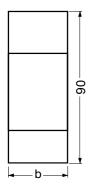
90

45

44

55

b = 4 module units   (1 module unit = 18 mm)
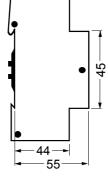
General notes
- The operating instructions must be handed over to the client.
- A faulty device shall be sent with a Return Good Note for Service provided by the appropriate Siemens sales office to the following address:
  SIEMENS AG, Siemensstr. 10, D-93055 Regensburg
- If you have further questions concerning the product please contact our technical support.
☎ +49 (911) 895-7222
🖨 +49 (911) 895-7223
✉ support.automation@siemens.com
www.siemens.de/automation/support-request

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Space for notes